

terminal [(k+1)], inserting said outgoing signal onto said second transmission line along a second direction of transmission defined from said terminal [(k)] towards [an] a second adjacent terminal [(k-1)], wherein (k) is an integer between 1 and (K) giving the sequential position of said node (k) in said ring];

at each said terminal [(k)], receiving an incoming signal over said first transmission line from [an] said first adjacent terminal [(k-1)], along said first direction of transmission, and from said second adjacent terminal [(k-1)] along said second direction of transmission; and

operating said plurality of communication terminals according to a unidirectional protection protocol upon detection of a failure condition in said incoming signal,

wherein said incoming signal comprises an incoming non-ATM STS-W and an incoming ATM STS-Mc multiplexed in an incoming STS-N, and said outgoing signal comprises an outgoing non-ATM STS-W and an outgoing ATM STS-Mc, multiplexed in an outgoing STS-N, where $M+W=N$, and N, M and W are integers indicative of the rates of said respective signals.

5. (Amended) A method as claimed in claim [2] 1, wherein said incoming signal comprises only said STS-Mc and said outgoing signal comprises only said outgoing ATM STS-Mc; and wherein said unidirectional protection protocol operates according to a variant of a BellCore GR-1230-CORE standard, comprising unmodified assignments for all bytes of the transport overhead (TOH) field of said incoming signal, [but:] except for

a modified assignment of bits 0-4 of the K1 byte, wherein [the] a first span code [(LP-S, SF-P)] is used for a lockout of protection code [(LP-P)], a second span code FS-S is used for a signal fail on protection code [(SF-P)], and third span codes [(SF-S), (SD-S), (MS-S) and EX-S)], and reverse request codes [(RR-S)] and RR-P are eliminated; and

a modified assignment of bits 6-8 of the K2 byte, wherein the code "Bridges and Switched" is [sued] used for a code "Switched".

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6 (Amended) A method as claimed in claim [3] 1, wherein said unidirectional protection protocol operates according to a BellCore GR-1230-CORE standard for said incoming and outgoing non-ATM STS-W and according to a variant of BellCore GR-1400-CORE standard for said incoming and outgoing ATM STS-Mc, said variant comprising unmodified assignments for all bytes of the transport overhead (TOH) field of said incoming signal, [but:] except for

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a modified assignment of bits 0-4 of the K1 byte, wherein [the] a first span code [(LP-S, SF-P)] is used for a lockout of protection code [(LP-P)], a second span code FS-S is used for a signal fail on protection code [(SF-P)], and third span codes (SF-S), (SD-S)[, (MS-S) and EX-S)], and reverse request codes [(RR-S) and (RR-P)] are eliminated; and

a modified assignment of bits 6-8 of the K2 byte, wherein the code "Bridges and Switched" is [sued] used for a code "Switched".

7. (Amended) A method for transporting a SONET formatted asynchronous transfer mode (ATM) signal on a unidirectional line switched ring comprising the steps of:

connecting a plurality [(K)] of nodes in a ring network provided with a working transmission line associated with a first direction of transmission and a protection transmission line associated with a second direction of transmission, opposite to said first direction;

detecting at a node [(k)] an error signal received from a first adjacent node [(k-1)] located adjacent to said node [(k)] and upstream with respect to said first direction;

[at said node (k),] generating a status change request at said node upon receipt of said error signal, and transmitting said status change request on said working and protection transmission lines;

and

restructuring all said nodes of said ring to operate according to one of a working transmission line failure (WRLF), a node failure (NF), a protection transmission line failure (PTLF), and a working and protection transmission line failure (WPTLF) configuration, upon receipt of said status change request.

10. (Amended) A method as claimed in claim [8] 7, wherein said ATM traffic comprises one of an STS-MC [and a plurality of] (M) of STS-1s, where M is an integer indicative of the rate of said STS-MC.

11. A method as claimed in claim 10, wherein said error signal, said status change request and ring recovery request signals are transported around said ring in the [K-bytes of the] transport overhead (TOH) of said STS-Mc.

12. (Amended) A method as claimed in claim 7, wherein said step of restricting all nodes into said WTLF configuration comprises:

remodelling said node [(k)] to assume a switched state;

remodelling said first adjacent node [(k-1)] to assume a bridged state; and

remodelling all remaining nodes [(p), where $p \neq k, k-1,$] to assume a passthrough state.

17. (Amended) A method for communicating information on a bidirectional line switched ring (BLSR) configuration including [a plurality of (K) of] K ring nodes connected by a first and a second transmission line, comprising the steps of:

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deploying said BLSR in a [homing-type] configuration, wherein each node [(k) having] has an incoming path associated with a node drop direction and an outgoing path associated with a node add direction[, where k is the range of a node in the ring and $k \in 1, K,$];

[at a first node (q)] where q is the range of a node in the ring, $q \neq k$, transmitting a first SONET formatted signal at a first node along said first transmission line[, said first SONET formatted signal having a bandwidth $K \times BW$];

receiving at each node [(k)] of said BLSR, [receiving] said first SONET formatted signal from said first transmission line, extracting [same] said first SONET formatted signal over a respective incoming path, and re-transmitting said first SONET formatted signal over a respective outgoing path back into said first transmission line;

inserting at each [said] node of said BLSR [(k), inserting] a respective outgoing SONET formatted signal into said second transmission line over said respective outgoing path, each outgoing SONET formatted signal comprising traffic formatted at a respective one of said nodes [node (k)], and having a bandwidth BW [:] and said first SONET formatted signal having a bandwidth $K \times BW$:
and

extracting at each said node at said BLSR [(k), extracting] a respective incoming SONET formatted signal received from said second transmission line over said respective incoming path, each incoming SONET formatted signal comprising traffic addressed to said respective node [(k)], and having said bandwidth BW .

18. (Amended) A node for a SONET line switched ring comprising:

a first ring interface with a first working port for receiving an incoming optical signal OC-Mc from a working fiber associated with a first direction of transmission, and converting [same] the

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incoming optical signal into an incoming STS-Mc[, where M is an integer indicative of the rate of said incoming and outgoing optical signals];

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a second ring interface with a second working port for converting an outgoing STS-Mc into an outgoing optical signal OC-Mc and transmitting the outgoing optical signal [same] over said working fiber, where M is an integer indicative of the rates of said incoming and outgoing;

an ATM cell management block for routing an output ATM cell extracted from said incoming STS-Mc as one of a drop ATM cell and a passthrough ATM cell, and multiplexing said passthrough ATM cell and an add ATM cell into said outgoing STS-Mc; and

an STS management block for routing said incoming STS-Mc between said first ring interface and said ATM cell management block, and routing said outgoing STS-Mc between said ATM cell management block and said second ring interface.

21. (Amended) A node for a BLSR SONET line switched ring comprising:

a first ring interface with a first working port for receiving a SONET formatted incoming optical signal from a working transmission line associated with a first direction of transmission, and converting [same] said incoming optical signal into an incoming non-ATM signal and an incoming ATM signal;

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a second ring interface with a second working port for converting an outgoing non-ATM signal and an outgoing ATM signal into an outgoing SONE-formatted optical signal and transmitting [same] said outgoing SONET formatted signal over said working transmission line;

an ATM cell management block for processing and transmitting an output ATM cell extracted from said incoming ATM signal as one of a drop ATM cell and a passthrough ATM cell, and multiplexing said passthrough ATM cell and an add ATM cell into said outgoing ATM signal;